A Report on the Plans for an Emergency at the Lepreau II Nuclear Reactor

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Should an emission occur at the proposed nuclear reactor, Lepreau II, it will, in our opinion, be effectively handled once the initial response gets underway.

- We are less convinced the initial response will be satisfactory given present plan.

Overall emergency planning in the province of New Brunswick is the responsibility of the provincial Emergency Measures Organization (EMO). NBEMO has the responsibility for responding to any emergency in the province including a nuclear emission at Point Lepreau.

Is NBEMO capable of doing this effectively? We believe: yes.

NBEMO has the legal power to act in an emergency and that power is recognized by the New Brunswick Power Corporation, the company that presumably will be responsible for operating Lepreau II.

Not only that, NBEMO has the power to co-opt the resources (perhaps summon would be a better word) of all other departments and agencies in the province including such key agencies as the Royal Canadian Mounted Police (RCMP).

To argue that NBEMO has not the power or resources to respond to an emergency at Lepreau would be to argue that New Brunswick has not the power or resources to respond.

Aside from having the power and the resources, NBEMO has, on the whole, an effective plan.

There is an onsite command centre (directed by the company) at the plant. There is an offsite command post far enough away from the point to be safe, close enough to be effective. There is a separate overall command post at NBEMO headquarters in Fredericton.

These various command posts are connected by a wide range of communications facilities. It would take close to a total breakdown of all communications in the province for a communications failure to occur which would cut the major control centre (Fredericton) from the two command posts at and near Lepreau.

At Fredericton, preparations have been made to have available expertise both from various provincial and federal agencies and from NB power. The expertise includes persons who are extremely competent in determining the problems which will arise should a radioactive emission occur. In past exercises these persons have played an extremely effective role in monitoring simulated emissions.

Should all these systems and persons prove inadequate, NBEMO and New Brunswick can turn to the federal government for support. Since the plan already calls for direct involvement of the regional person from the federal crisis agency, Emergency Planning Canada (EPC) such a step up in response would not be difficult.

Our analysis of past incidents suggests that problems occur in emergency response when it is not clear who or what agency is in charge, when there are communications problems, when expertise is not available or not recognized. None of these problems should arise in New Brunswick given the planning that has been done.

It is legitimate, of course, to ask: will the plan work?

It is not possible to give a totally satisfactory answer to that question.

It is possible to say that our own research suggests that planning, however effective, is far more useful in handling emergencies than

even experience. It is also possible to say that NBEMO has sponsored some simulations and while these have had their limitations they have ensured that the agencies which would be involved in an emergency response are familiar with their responsibilities and with the need to co-operate with others.

In short, there is, in our view, little doubt that New Brunswick has effective and sensible emergency planning and that that planning meets the criteria which any rationale review would expect.

What about NB power? Is there any possibility it would frustrate the continuous response by failing to co-operate.

The evidence suggests: no.

The corporation has, in the past, played a large and continuing role in the development of the NBEMO plan. It has taken an active role in all exercises. Its staff maintain constant contact with NBEMO staff. It has assisted NBEMO in doing much of the research that has led to the current capacity to respond.

In addition, the corporation and NBEMO have one resource that is superior to what we have seen in any other situation. Together, using survey techniques, they have acquired a detailed data base on the residents of the communities close to Point Lepreau, a data base so thorough that it is close to astounding to others in the emergency planning field.

Though it has taken time, the corporation and NBEMO, working together, have managed to secure the co-operation of almost all the residents of the area in providing information which might be useful should an emergency occur. They have also managed to convince almost all of them that it makes sense to keep emergency instructions and emergency supplies on hand at all times.

Where then are the weak spots?

There are four:

1. initial response at the plant;

2. the way that response is made known to other agencies;

3. the siren system in the Lepreau area;

4. the warden system in the Lepreau area.

All of these relate to the initial response should an emergency occur. All appear to be somewhat less than adequate.

Here's what happens when an emergency occurs:

The shift supervisor, the person in charge at the plant, uses a telephone to call an office of the corporation in Fredericton, an office he never has occasion to call for any other reason. That office, in turn, calls the RCMP in Fredericton. The RCMP call the telephone answering services (TAS) of NBEMO in Saint John. The TAS calls the duty officer in Fredericton. That person arranges for others in the system to be alerted including the wardens at Lepreau. (He also calls the plant to let them know he has been informed.) The wardens operate a fan-out system via telephone gradually calling less senior wardens until those wardens who are to actually notify their neighbors have been notified.

What are the problems with that system?

First, it depends on one person, the shift supervisor, deciding that a problem has arisen of sufficient magnitude to justify calling the corporation office in Fredericton.

We did not visit the plant and did not see the shift supervisors at work or to interview them. We can not, therefore, properly assess the likeliness of these persons following such a plan.

What we would say is this: effective emergency response is most likely when persons are not required to break established routine.

Our information is that shift supervisors talk regularly to the emergency control centre in Fredericton and to various senior company officials. These officials quite regularly pass on information from the supervisor to outsiders including EMO. Shift supervisors do not talk to the dispatch centre in Fredericton (the office assigned to receive the emergency call). It makes little sense to require a person to break what could easily be years of habit to respond to an emergency. It makes little sense to encourage that person to break away from established internal channels knowing that that decision will mean outsiders are informed as a result of that decision.

A person who has spent his career making decisions using one communications system and spent his career communicating within the company (leaving it to others to decide when to go outside) is likely to find it difficult to break that habit. It seems more than reasonable to suggest that the supervisor will attempt to ignore all those signals which suggest a complete breakdown until he is compelled to start the emergency response rolling. That is certainly the sort of thing which has happened in emergencies in the past.

One of the fishermen we interviewed remarked that that was what he thougnt would happen should a major problem develop at Lepreau. We asked why? He replied, "people are people." We agree.

It would make for more sense - if the dispatch centre needs to be part of the plan (and there are given reasons for this) - to have

the supervisor communicate to that centre on some sort of irregular basis; so emergency action would not seem so strange. It might make even more sense for the supervisor to take advantage of the direct radio link from the plant to the RCMP in Fredericton (we assume plant security will have the same capacity at Lepreau II as Lepreau I) to start the response. The call to the company could come second.

(Perhaps it would make sense even for the company call to be made first and the call to the RCMP second. The first action - a familiar one - might help inspire the second. It would also guarantee someone else was immediately informed and would be in a position to pass the word along should the supervisor not do so.)

It is also overly dependent on the telephone. It seems not unreasonable to suggest it may be difficult to make it work to the point the local wardens are quickly and effectively informed. It would make more sense if the corporation, as a matter of course, briefed the key wardens every time a problem occurred at the plant indicating that the problem was not serious enough to deserve a response. The warden would then acquire confidence in the system and its ability to reach them.

The use of the sirens raises even greater concern.

The reasons for the decision to install sirens are far from clear. They appear to be some sort of hangover from World War II.

The fact is - and everyone involved knows this - the sirens have been a continual headache to the people in the area, to the corporation to NBEMO. They have malfunction so often - going off when they should not go off, not going off when they should go off - that they are a standing joke. It is hard to believe they can serve any useful purpose. We suggest they be scrapped.

(Even worse the continual failure of the sirens has cast doubt upon the competence of both NBEMO and the company to respond effectively should an emergency occur. Removing the sirens would remove one of the things which does make some local residents doubt the system will work.

Finally, the wardens.

The idea of having an interpersonal warning system composed of wardens strikes us as entirely logical. It is the sort of system which would work well in small scattered, low density population area such as the area around Point Lepreau. (While there are communities with names these communities themselves are strung out along the various shorelines.)

The warden system is especially important because the residences in the area are so strung out that any outsider, say a newcomer to a nearby RCMP detachment, would find it difficult to ensure that no places were missed when a warning was being past. Such a warning job would be far better done by someone living in and familiar with the local terrain.

The problem with the current warden system is that it has not had enough attention and that the persons involved, while they command status within the community, are often involved in other things. Some of them are fishermen who are more than likely to be away a great deal and are, thus, not likely to be available for an emergency response.

We suggest that the warden system needs review.

It makes sense to have wardens but these wardens need to be persons who are more likely to be on shore available than out fishing. This would suggest that some retired persons and housewives would

make better wardens (simply because of availability) than the person now in those posts. (Many of the current wardens have, in fact, arranged for their spouses to be their back-ups.)

It would also help to give the wardens some regular tasks which would make others aware of their position and get them familiar with those they are supposed to warn. It might help if the wardens were given some sort of identification (say a decal for their vehicles) and some sort of financial recognition (some small honorarium). We understand such ideas are under consideration.

In some ways and at some times warning the persons close to Lepreau II will not be a problem.

NBEMO and the corporation know the media habits of the entire area. Should a warning be issued via the media it will become known to persons throughout the area. (Party lines may inhibit some forms of calling but they maximize eavesdropping.) Should a warning reach fishermen via marine radio (part of the plan) that warning, will also quickly be disseminated on shore. Most persons in the area either have their own marine radio or have access to someone who does.

The major problems of starting a warning in the Lepreau area will occur when persons are not attached to media e.g. at night and when fishermen are not out fishing e.g. at certain times of year. Obviously some system is needed to fill in those gaps. The warden system would appear to be the logical way to do that once it is overhauled.

Up until now we have been discussing matters within our area of expertise - emergency planning, emergency warning, emergency response. Our remaining general comments must depend, to a considerable extent, on the expertise of others.

It is our understanding that a radioactive emission from Lepreau is a most improbable occurrence. It is also our understanding that should one occur the radioactive material released would move through the air quite slowly. It is our understanding that the speed would be affected by weather but that weather conditions which would speed the movement of radioactive material would also tend to disperse it.

Given that these assumptions are correct, we are convinced NBEMO and those agencies working with it would have little problem developing an adequate response - even carrying out a major evacuation - should that be required. The speed at which an emission would hit a major population area (such as the city of Saint John) would allow more than enough time for emergency plans to be put into effect and carried out. Evacuating such areas is not really all that difficult. It is comparatively easy to reach the population (it is densely packed) and it is comparatively easy to find vehicles and traffic arteries to move those who need to be moved. In a sense warning and evacuating those living close to Lepreau would be more difficult. The time frame is likely to be much shorter. The communications and transportation systems are much less developed.

(We do not wish by stating these concerns to alarm local residents. If the initial response is communicated quickly to the key response agencies there will, according to our information, be more than enough time for persons to take cover or to escape, whichever seems most appropriate.)

Our overall concerns are therefore all in one area. We are not entirely satisfied that the initial emergency response will be satisfactory. We are satisfied that if it is there will be few, if any, further problems which can not be resolved.

Revisions

In the course of our enquiries, we, of course, became aware that others - NBEMO, the corporation - were aware of some of these concerns. Not surprisingly, they were moving to correct some of them.

It is our understanding that our report must be based on the existing plan not on some possible future amendment. We feel, however it would be helpful to note that NBEMO is putting in a new warning system for the Lepreau area one which would allow the wardens to be reached through a radio tower and some sort of beeper. That would clearly eliminate one of the problems we see in the present system.

We are also aware that as a direct result of our enquiries the corporation became aware that there was not an adequate back-up plan for passing the warning from the dispatch centre to J division of the RCMP at Fredericton. We understand that something has been done to correct that flaw.

We mention these points not to undermine our own criticisms but to suggest that the problems which do exist are not all that difficult to overcome. A few adjustments would resolve most of the current deficiencies.

In addition to providing a general overview of emergency planning for a problem at Lepreau II we were asked to provide comments on some specific questions. The rest of this document does just that.

1. Effective Public Communication

NBEMO and New Brunswick power have gone to great lengths to inform the public of their plans for the plants at Lepreau. The

information, in our view, has got through. Our own enquiries showed that homes throughout the area had emergency instructions readily available.

In addition to making direct contact with residents in the area, the emergency planners have gone to considerable length to contact the media and to determine which media are listened to and watched by whom. As a result there is a well-developed media communications system in place.

Finally, the government of New Brunswick through the New Brunswick Information Service (NBIS) has a direct link to all but one radio station in the province and to all TV stations and to stations in nearby United States states. Emergency messages could be prepared and released quickly in both English and French should that prove necessary.

The one problem with public communication is in the ability of those responding to start an initial warning system when persons are away from the media e.g. at night. That has already been covered in this report.

2. Weather

Weather conditions would affect what might happen to an emergency response. They would also affect what would happen to an emission.

It is our view that some kinds of adverse weather - snow for example - might affect the ability of persons to move from the Lepreau area. There is however a good plowing system in place and a good straight highway leading out from the point. Since any emission is (so we understand) likely to move fairly slowly we do not foresee weather as presenting severe problems.

It is also true that some kinds of weather such as severe fog, weather which is far more common to that area than snow would tend to reduce rather than increase the hazard. Fog would substantially reduce the probability of an emission moving at high speed and moving from the area.

Our one concern about weather would be an ice storm which would knock down phone lines. That is why we are concerned there be an adequate back-up system to the current method of local warning by telephone.

(Emergency research suggests it is critical that all communications systems be backed up by alternatives. That is not the case at present in the Lepreau area.)

3. Linkages

We have already expressed our concerns about the initial communications system. As mentioned above these systems do not always have adequate back-up.

Once the emergency response is fully underway however there are more than adequate back-up systems in place. In fact the linkages between the main emergency operations centre at Fredericton and the offsite command post near Lepreau are as varied and as satisfactory as we have seen anywhere.

4. Second emergency

Since NBEMO can command the full resources of the province and summon federal help should that prove necessary there is in our view no need to worry about its ability to deal with more than one emergency at the same time.

An example of a second emergency might be the prospect of an earthquake hitting the Lepreau area at the same time as an emission.

This seems unlikely.

If it should happen it is not likely to increase the problems for the present plant (unlike most buildings) is built to resist all but the most severe earthquakes and to resist even the most severe earthquakes unless they are centered almost at Lepreau.

Should an earthquake of sufficient magnitude hit the Lepreau area to severely damage the plant the problems with the earthquake would be so severe as they would minimize the concerns about the plant.

5. Mock tests

There have been some simulations or mock tests of disasters.

They have not been all that successful.

One problem is that they have tended to raise so many problems that those involved tended to see them as unrealistic and therefore unconvincing.

These tests have, however, achieved one major purpose. They have made provincial officials aware of their responsibilities.

The evidence we have is that all such exercises are productive in that they focus attention on an emergency planning.

6. NBEMO

NBEMO is much smaller than some provincial emergency organizations, much larger than others (say than the one in Ontario).

It is our view that its resources are quite in line with the size of the province and that its ability to call upon all other departments and agencies of government in an emergency more than makes up for anything that might be lacking solely because of size.

The critical question is: is NBEMO accepted as being in charge should an emergency occur? The answer is: yes.

We think that should end any concerns which might be expressed about the capacity of NBEMO to respond.

7. Credibility

The credibility of NBEMO and the corporation has been affected by the incredible screw-ups with the sirens. The mock exercises - they have been somewhat less than well received - have hurt as well.

In our view the fact remains that the public in the area are well aware of emergency plans, well aware of what they are supposed to do. The past problems would not on the whole affect an effective response.

8. Comparisons

It was difficult for us to compare what has been done at Lepreau to what has been done at other nuclear plants. That would have taken a considerable amount of time and expense.

What we can do is compare the planning for Lepreau with other types of emergency plans. On that basis the planning stands up very well indeed.

There are of course some problems and we have noted these earlier. There are some concerns about initial response. The fan-out system is too dependent on the telephone and too complicated. The siren system is not satisfactory. The warden system needs an overhaul.

It is nevertheless clear that there has been an exceptional public information job done in the Lepreau area and that people there are far more aware of the problems and what to do about them than in any area we have previously visited. That means we can compare Lepreau favorably to areas hit by a wide range of emergencies all across Canada; on balance, the planning is really quite good.